



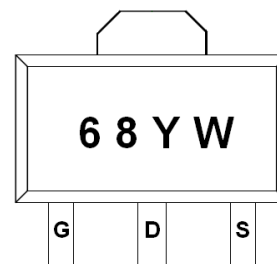
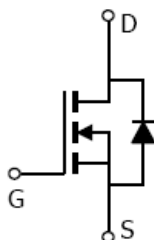
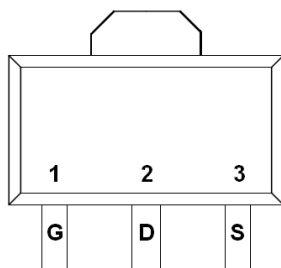
### General Description

AFN8968, N-Channel enhancement mode MOSFET, uses Advanced Trench Technology to provide excellent  $R_{DS(ON)}$ , low gate charge. These devices are particularly suited for low voltage power management, and low in-line power loss are needed in commercial industrial surface mount applications.

### Features

- 100V/3.0A,  $R_{DS(ON)}=300m\Omega@V_{GS}=10V$
- 100V/2.0A,  $R_{DS(ON)}=310m\Omega@V_{GS}=4.5V$
- Super high density cell design for extremely low  $R_{DS(ON)}$
- SOT-89-3L package design

### Pin Description ( SOT-89-3L )



### Application

- Motor and Load Control
- Power Management in White LED System
- Push Pull Converter
- LCD TV Inverter & AD/DC Inverter Systems.

### Pin Define

| Pin | Symbol | Description |
|-----|--------|-------------|
| 1   | G      | Gate        |
| 2   | D      | Drain       |
| 3   | S      | Source      |

### Ordering Information

| Part Ordering No. | Part Marking | Package   | Unit        | Quantity |
|-------------------|--------------|-----------|-------------|----------|
| AFN8968S89RG      | 68YW         | SOT-89-3L | Tape & Reel | 1000 EA  |

- ※ 68 parts code
- ※ Y year code ( 0 ~ 9 )
- ※ W week code ( A ~ Z = 1 ~ 26 / a ~ z = 27 ~ 52 )
- ※ AFN8968S89RG : 7" Tape & Reel ; Pb- Free ; Halogen -Free



## Absolute Maximum Ratings

(T<sub>A</sub>=25°C Unless otherwise noted)

| Parameter                                       | Symbol           | Value                | Unit |
|---|------------------|----------------------|------|
| Drain-Source Voltage                            | V <sub>DSS</sub> | 100                  | V    |
| Gate-Source Voltage                             | V <sub>GSS</sub> | ±20                  | V    |
| Continuous Drain Current(T <sub>J</sub> =150°C) | I <sub>D</sub>   | T <sub>A</sub> =25°C | 3.0  |
|   |                  | T <sub>A</sub> =70°C | 2.0  |
| Pulsed Drain Current                            | I <sub>DM</sub>  | 6                    | A    |
| Continuous Source Current(Diode Conduction)     | I <sub>S</sub>   | 1.6                  | A    |
| Power Dissipation                               | P <sub>D</sub>   | T <sub>A</sub> =25°C | 1.45 |
|   |                  | T <sub>A</sub> =70°C | 0.6  |
| Operating Junction Temperature                  | T <sub>J</sub>   | 150                  | °C   |
| Storage Temperature Range                       | T <sub>STG</sub> | -55/150              | °C   |
| Thermal Resistance-Junction to Ambient          | R <sub>θJA</sub> | 120                  | °C/W |

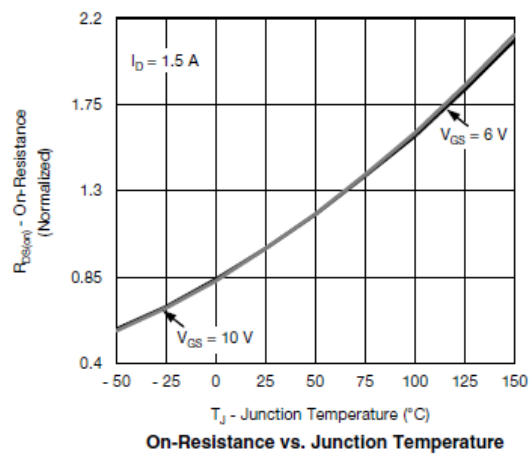
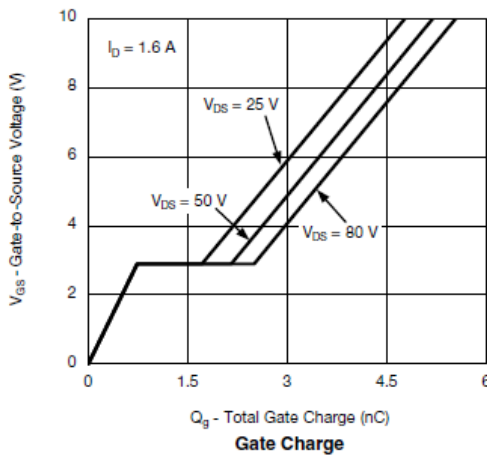
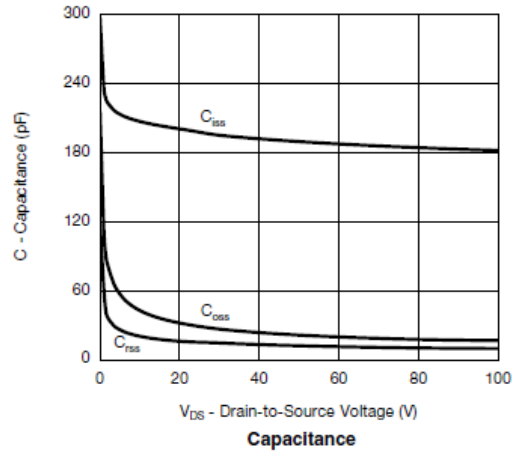
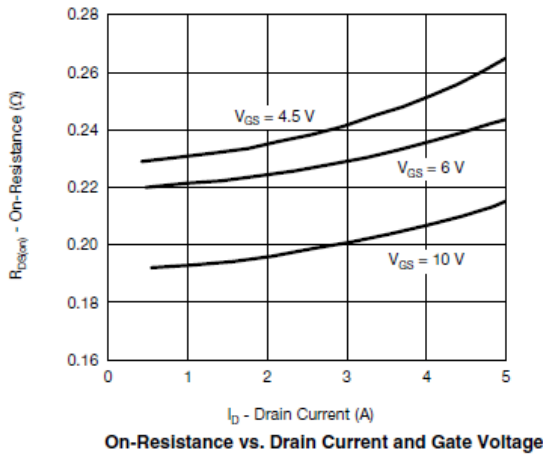
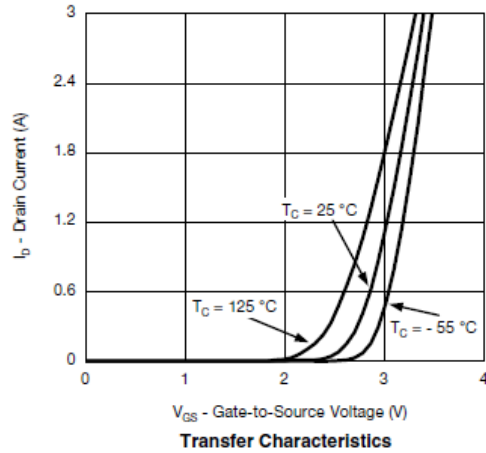
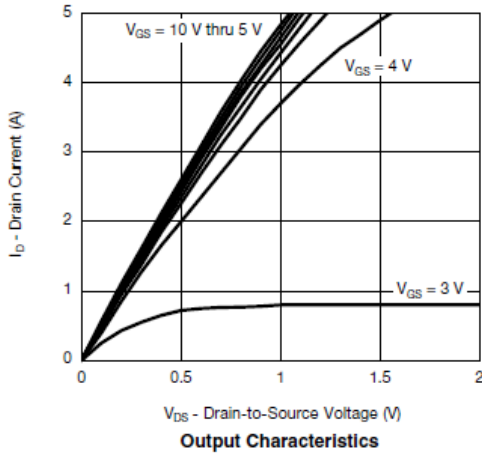
## Electrical Characteristics

(T<sub>A</sub>=25°C Unless otherwise noted)

| Parameter                       | Symbol               | Conditions  | Min. | Typ  | Max. | Unit |
|---------------------------------|----------------------|---|------|------|------|------|
| <b>Static</b>                   |                      |   |      |      |      |      |
| Drain-Source Breakdown Voltage  | V <sub>(BR)DSS</sub> | V <sub>GS</sub> =0V, I <sub>D</sub> =250uA  | 100  |      |      | V    |
| Gate Threshold Voltage          | V <sub>GS(th)</sub>  | V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250uA  | 1.0  |      | 2.0  |      |
| Gate Leakage Current            | I <sub>GSS</sub>     | V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V  |      |      | ±100 | nA   |
| Zero Gate Voltage Drain Current | I <sub>DSS</sub>     | V <sub>DS</sub> =80V, V <sub>GS</sub> =0V   |      |      | 1    | uA   |
|                                 |                      | V <sub>DS</sub> =80V, V <sub>GS</sub> =0V<br>T <sub>J</sub> =85°C   |      |      | 10   |      |
| On-State Drain Current          | I <sub>D(on)</sub>   | V <sub>DS</sub> ≥ 5V, V <sub>GS</sub> =4.5V   | 5    |      |      | A    |
| Drain-Source On-Resistance      | R <sub>DS(on)</sub>  | V <sub>GS</sub> =10V, I <sub>D</sub> =3.0A  |      | 280  | 300  | mΩ   |
|                                 |                      | V <sub>GS</sub> =4.5V, I <sub>D</sub> =2.0A   |      | 290  | 310  |      |
| Forward Transconductance        | g <sub>FS</sub>      | V <sub>DS</sub> =20V, I <sub>D</sub> =1.5A  |      | 2    |      | S    |
| Diode Forward Voltage           | V <sub>SD</sub>      | I <sub>S</sub> =1.3A, V <sub>GS</sub> =0V   |      | 0.85 | 1.2  | V    |
| <b>Dynamic</b>                  |                      |   |      |      |      |      |
| Total Gate Charge               | Q <sub>g</sub>       | V <sub>DS</sub> =50V, V <sub>GS</sub> =4.5V<br>I <sub>D</sub> ≅1.6A   |      | 2.8  | 5.8  | nC   |
| Gate-Source Charge              | Q <sub>gs</sub>      |   |      | 0.75 |      |      |
| Gate-Drain Charge               | Q <sub>gd</sub>      |   |      | 1.4  |      |      |
| Input Capacitance               | C <sub>iss</sub>     | V <sub>DS</sub> =50V, V <sub>GS</sub> =0V<br>f=1MHz   |      | 200  |      | pF   |
| Output Capacitance              | C <sub>oss</sub>     |   |      | 22   |      |      |
| Reverse Transfer Capacitance    | C <sub>rss</sub>     |   |      | 13   |      |      |
| Turn-On Time                    | t <sub>d(on)</sub>   | V <sub>DD</sub> =50V, R <sub>L</sub> =39Ω<br>I <sub>D</sub> ≅1.3A, V <sub>GEN</sub> =4.5V<br>R <sub>G</sub> =1Ω |      | 25   | 50   | ns   |
|                                 | t <sub>r</sub>       |   |      | 20   | 50   |      |
| Turn-Off Time                   | t <sub>d(off)</sub>  |   |      | 15   | 30   |      |
|                                 | t <sub>f</sub>       |   |      | 10   | 25   |      |

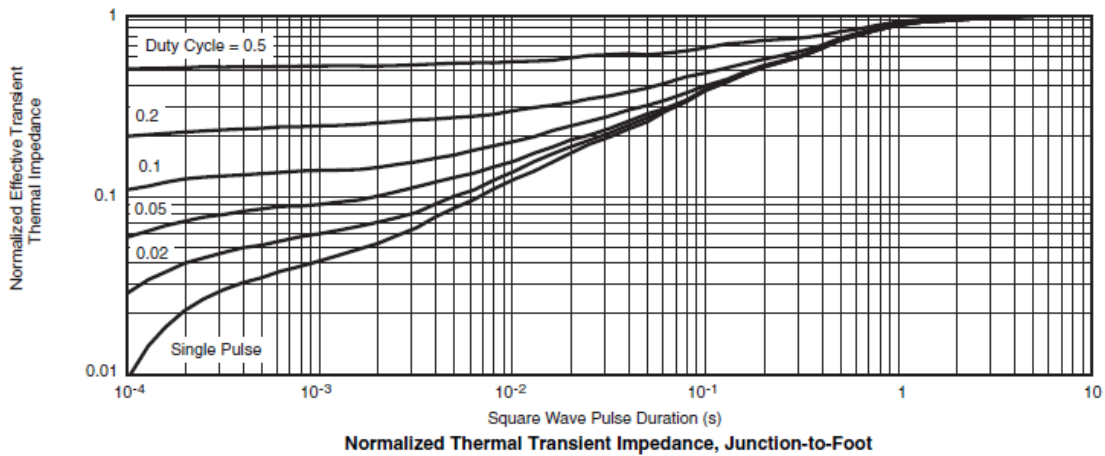
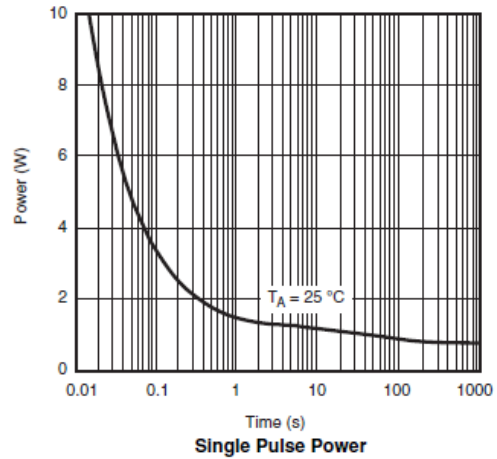
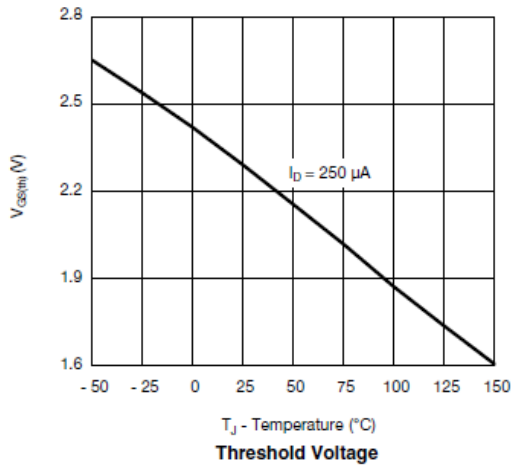
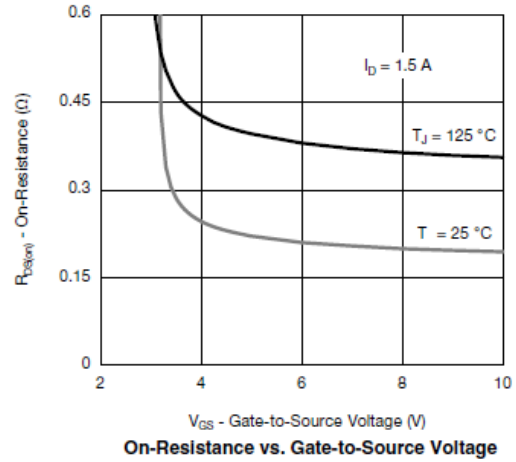
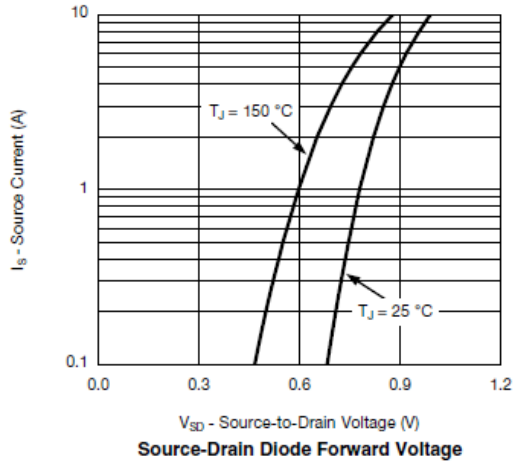


## Typical Characteristics





## Typical Characteristics





**Typical Characteristics**

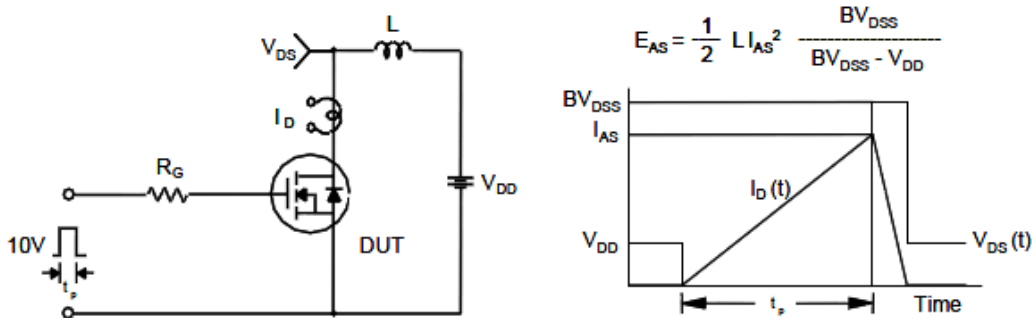
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms

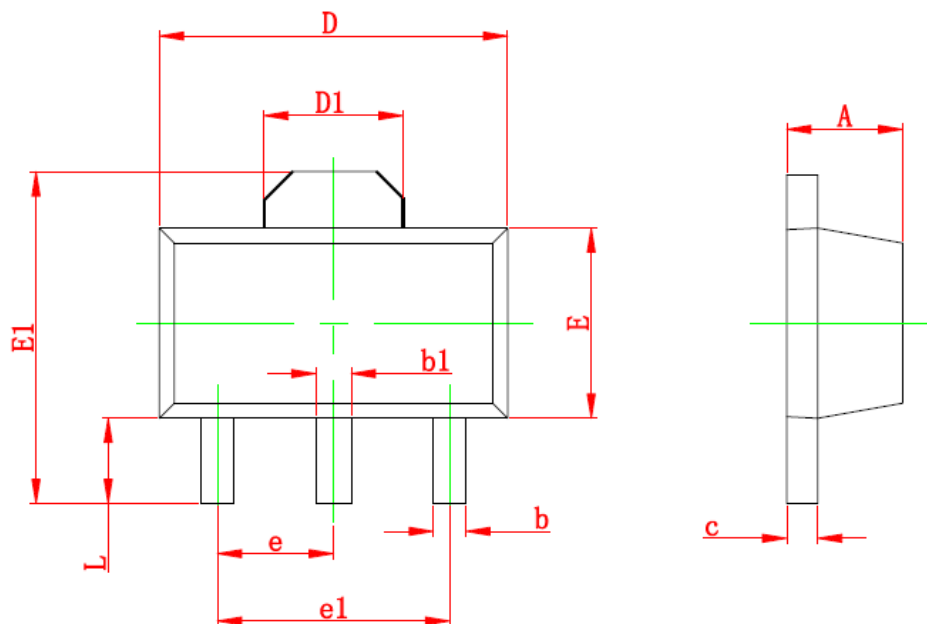


Unclamped Inductive Switching Test Circuit & Waveforms





**Package Information ( SOT-89-3L )**



| Symbol | Dimensions In Millimeters |       | Dimensions In Inches |       |
|--------|---------------------------|-------|----------------------|-------|
|        | Min                       | Max   | Min                  | Max   |
| A      | 1.400                     | 1.600 | 0.055                | 0.063 |
| b      | 0.320                     | 0.520 | 0.013                | 0.197 |
| b1     | 0.400                     | 0.580 | 0.016                | 0.023 |
| c      | 0.350                     | 0.440 | 0.014                | 0.017 |
| D      | 4.400                     | 4.600 | 0.173                | 0.181 |
| D1     | 1.550 REF                 |       | 0.061 REF            |       |
| E      | 2.300                     | 2.600 | 0.091                | 0.102 |
| E1     | 3.940                     | 4.250 | 0.155                | 0.167 |
| e      | 1.500 TYP                 |       | 0.060TYP             |       |
| e1     | 3.000 TYP                 |       | 0.118TYP             |       |
| L      | 0.900                     | 1.200 | 0.035                | 0.047 |

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